

CLAIMS

What is claimed is:

1. A method for compressing electronically stored still images in a multi purpose compression system comprising the step of:
 - 5 a. selecting the image to be compressed;
 - b. converting any selected image that is in the RGB format into the YUV 4:4:4 format;
 - c. converting images in the YUV 4:4:4 format into the YUV 4:2:0 format
 - d. combining the U and V color planes;
 - 10 e. executing a one-dimensional discrete wavelet transform for every line of the Y plane such that two blocks with multiple rows and columns are formed wherein one block contains low frequencies and the other block contains high frequencies;
 - f. executing a one-dimensional discrete wavelet transform for every line of the
15 plane obtained after the preceding step such that the blocks in the obtained frame are further divided into two blocks with multiple rows and columns, wherein the block containing low frequencies is divided into an LL block having low frequencies across and up and an LH block having low frequencies across and high frequencies up, and the block containing high frequencies is
20 divided into an HH block having high frequencies across and up and an HL block having low frequencies across and low frequencies up;
 - g. executing steps e and f for the obtained LL block and for each subsequent LL block four more such that the resulting plane contains sixteen variously sized blocks;
 - 25 h. numbering the blocks in the resulting plane according to a pre-determined numbering scheme;
 - i. repeating steps e through h for the UV plane;
 - j. selecting a filter from a library of possible filters wherein the filter selection is based on the image dimensions and the coding format;
 - 30 k. executing vertical and horizontal filtering passes on the blocks in the transformed Y and UV planes according to a pre-determined filtering scheme to obtain the frequency coefficient for each element in the transformed planes;

- l. quantizing the frequency coefficients and recording the quantized values into a one-dimensional array;
- m. quantizing the one-dimensional array by modified run length encoding such that a data array and a length array are obtained;
- 5 n. replacing the values in the data array with a corresponding value in a pre-designated library of corresponding values wherein if no corresponding value exists in the library for an element in the data array, a one element shift is executed and the library is rechecked for a corresponding value;
- 10 o. recording the relative displacement of elements in the length array having a value higher than a pre-determined number to an additional array called the shift array;
- p. writing the shift array to the end of the length array;
- q. encoding the length array and the data array using entropy encoding methods; and
- 15 whereby the image can be restored by reversing the steps a through q above.